

August 21, 2013

Assemblymember Anthony Rendon, Chair
Assembly Water, Parks, and Wildlife Committee

Re: Framework for a Water Bond

Dear Honorable Chair Rendon:

First, congratulations on pulling together an excellent framework for discussing the critical issue of water policy in California. I hope that this productive conversation continues and creates a water bond that will target and solve fundamental problems associated with California's water quality and water storage.

Second, the framework offers to opportunities to take action on addressing **the continued impact of legacy mines in the Sierra and Inner Coast Range on the state's water quality and storage projects**. One of the biggest issues facing the Delta and its tributaries is mercury directly from legacy mines in the Sierra and Inner Coast Range. Mercury was mined in the coastal range, retorted down into the "quicksilver" or elemental form of mercury, and then used to recover gold as part of hydraulic and hard rock mining in the Gold Country (the Sierra Nevada).

Methylmercury, the highest priority bioaccumulative toxin in California, pervades the waters of northern California, especially the San Francisco Bay and Delta. Methylmercury, mercury that has entered the food chain, is highly toxic for children and pregnant mothers who eat contaminated fish. OEHHA has issued dozens of advisories for waters surrounding the Delta and its many tributaries, and recently concluded that contamination was so pervasive that it issued a fish consumption advisory about mercury for fish caught in all lakes and reservoirs in California.

Your framework brings new resources to help address these legacy mine problems under three general areas:

Number VI. Protecting Rivers, Lakes, Streams and Watersheds:

Legacy mines make a huge contribution to the mercury loading to the state's water – including the entire watershed of the San Francisco Bay and Delta - every times it rains. For example, one tunnel draining a hydraulic mine where we have collected two years-worth of data has been found to contribute as much as a pound of mercury to the river in every major rainstorm (compare this to the Sacramento Sanitation District discharge permit that limits mercury discharge in the river by the county to only 2.3 pounds per year). This discharge consists of elemental mercury that is bonded to silt particles so tiny that they can float for miles on the current. This mercury contaminated water travels hundreds of miles from tiny streams and creeks and ends up in the Delta, Bay and eventually the ocean.



The least expensive and most effective way to treat this mercury problem is to remediate hydraulic mines and other legacy mines. While we are not seeking specific amounts or earmarks for any project, the framework does allow funding for pilot projects, such as the Malakoff Diggins State Historic Park project.

**Example Project that would be eligible under this framework element:
Humbug Creek/Malakoff Diggins Remediation Project**

The Humbug Creek/Malakoff Diggins Remediation Project is an example of an upland source project that could be funded through the proposed water bond. Malakoff Diggins State Historic Park is the former site of the largest hydraulic mining operation in California – a highly destructive mining process that used extensive amounts of liquid elemental mercury. A Working Group of experts and regulators convened by The Sierra Fund and State Parks is creating a management plan to prevent harmful discharge of mercury and sediment into the Yuba River Watershed from erosion in the park.

Problem: Hydraulic mining permanently altered the landscape of the Sierra, especially visible at Malakoff Diggins State Historic Park. It used high-powered water cannons to power-wash away hillsides and applied hundreds of pounds of mercury a day in order to process gold. Those hillsides remain prone to extreme erosion, and storms at the Malakoff Diggins site cause sediment contaminated with high amounts of mercury to wash into Humbug Creek, a tributary of the Yuba River, increasing the amount of heavy metals in the creek as well as the turbidity of the water.



Solution: The enormous size of the site – featuring a pit a mile long and drainage tunnels that stretch for thousands of feet – and its historic, protected status as a state park makes a typical full-scale remediation operation infeasible. Instead, the Humbug Working Group convened by The Sierra Fund is developing a plan that would include diverting water away from the more toxic parts of the site and treating water to eliminate toxic materials that would otherwise be flowing into California’s water system.

The Sierra Fund’s Working Group has finished assessing this site, describing the physical and chemical characteristics of the site and outlining potential solutions. The project’s scale and its potential as a model for cleanup of hydraulic mines throughout California demands a thorough evaluation of the impact each proposed solution would have on water quality, soil quality, and the park’s historic features before beginning any course of action. Overlapping jurisdictions and concerns about liability increase the complexity of the problem. This project needs increased investment to be a model cleanup of complex legacy mercury sources like hydraulic mines.

Number VIII. Sacramento-San Joaquin Delta Sustainability

Mercury pollution originates in the Inner Coast Range and Sierra – 98% of the mercury in the San Francisco Bay and Delta comes from legacy gold mines in the Sierra and mercury mines in the Inner Coast Range. About 1/3 of the mercury in the Delta and Bay comes from the Cache Creek, where many unremediated legacy mines discharge mercury contaminated sediments every time it rains. Scientists estimate that there are more than 40 legacy mercury mines in both the Cache Creek and Putah Creek drainages. Some of the more well-known sites include Knoxville, Oat Hill, Aetna, and Helen Mines in the Putah Creek watershed and the Sulphur Bank, Abbot-Turkey Run, Wide Awake, Elgin and Petray-Rathburn Mines in the Cache Creek watershed.

Mercury mines require continuous treatment because the mercury deposit is on site. These mines need to be identified, assessed, prioritized, and cleaned up. This framework would allow funding for pilot projects such those proposed by Tuleyome in Napa County.

Example Project that would be eligible under this framework element:

Corona and Twin Peaks Mines

Tuleyome's project to remediate legacy mercury mines in Napa County is an example that demonstrates an effective role for non-profit organizations. The Corona and Twin Peaks Mines are inactive mercury mines from the East Mayacmas Mercury District.



Recent investigations by the US Geological Survey have documented that these mines release iron, sulfate, nickel, and mercury to the James Creek watershed.

Problem: This mining legacy contributes to the listing of the following waterbodies as impaired: James Creek (nickel and mercury), Lake Berryessa (mercury), and lower Putah Creek (mercury and boron). James Creek has been identified as prime trout habitat. Lower Putah Creek is a wild trout stream that drains into the Yolo Bypass, a nationally recognized fish rearing, wildlife habitat, farming, and flood control area with some of the highest mercury concentrations in the Bay-Delta. Fish consumption advisories are posted for Lake Berryessa and for lower Putah Creek because of fish mercury contamination.

Solution: The purpose of this project is to develop and demonstrate a cost-effective, legal approach for mine remediation involving private landowners, non-profit organizations, regulators, and other stakeholders. This project will design, implement, and document the effectiveness of semi-passive treatment technology to remediate the impacts of discharges from remote, inactive mercury mine sites.

IX. Storage for Climate Change

This element of the framework talks about maintaining water storage in existing reservoirs. This is especially challenging in light of projected changes in precipitation caused by climate changes. Sedimentation poses a massive problem for water storage – one USGS study found that 200 California reservoirs had lost 50% of their storage capacity to sedimentation, equivalent to **1.7 million acre feet of water**. As precipitation in the upper watersheds of the Sierra Nevada – home to many legacy gold mines – changes from snow to rain the rate of sedimentation is sure to increase.

Sediment contaminated with mercury eroding from legacy mines settles in reservoirs and is difficult to remove safely. Reclaiming storage capacity in reservoirs that are already built by removing mercury-laden sediment is a cost-effective way to address both the mercury problem and the storage problem of sedimentation.

Example Project that would be eligible under this framework element: Combie Reservoir Sediment and Mercury Removal Project

The Combie Reservoir Sediment and Mercury Removal Project is an example of a reservoir project that could be funded through this water bond. It is a project conducted by the Nevada Irrigation District on the Combie Reservoir in Placer and Nevada Counties. The project uses an innovative process to separate harmful metals including mercury from sediment accumulated in the reservoir, which traps sediment and allows the removal of mercury before it is dispersed further downstream.

Problem: Sediment contaminated with mercury from legacy of gold mining along the Bear River erodes and washes into the reservoir where it accumulates. Typically, the reservoir would be dredged to remove the sediment, but new findings show that the traditional dredging process releases mercury locked in the sediment in a more-mobile, more-toxic form which then moves downstream where it is harder to remedy. With necessary maintenance on hold, sediment continues to accumulate in the reservoir and reduce storage capacity.

Solution: A new process to clean and remove sediment from the reservoir uses a more sophisticated dredge and mercury removal equipment to capture and treat sediment. The sediment is processed to separate harmful metals, especially mercury, resulting in turbid water that can then be treated. The turbidity is removed, and clean water can be returned to the reservoir.

While the existing pilot project has delivered promising results, it is incomplete and lacks the resources to take the next step. Most importantly, it is crucial to conduct more-intensive studies to quantify how well this process gets the mercury out of water and sediment downstream in order to prove its effectiveness at similar sites across California. This project needs increased investment in order to be a model for dealing with the effects of legacy mercury at reservoirs.

Conclusion

The Sierra Fund has spent nearly a decade working on the problems associated with legacy mines, and have developed a strong coalition of organizations interested in finding solutions to these problems. This coalition includes water agencies, including: the Nevada Irrigation District, El Dorado County Water Agency and the Mountain County Water Resources Agency; private business including Teichert Materials; and a large number of conservation groups including Tuleyome, Environmental Working Group, Planning & Conservation League and the Sierra Nevada Alliance. These groups vigorously endorse our campaign to “get the mercury out” by ensuring that any water bond that goes before the voters addresses these legacy mine issues.

The proposed framework goes a long way to clarify and prioritize the issues before the state, and leaves room to address the concerns raised in this letter. We thank you for your good work to date, and hope that we can be available to help provide any information that you need as you design the real “meat” of the bond.

We ask for your support to **solve this problem at its source** and **get the mercury out**.

Sincerely,

A handwritten signature in black ink that reads "Elizabeth J. Martin". The signature is written in a cursive, flowing style.

Elizabeth “Izzy” Martin
CEO
The Sierra Fund

Cc: Alf Brandt, Assemblymember Redon’s staff